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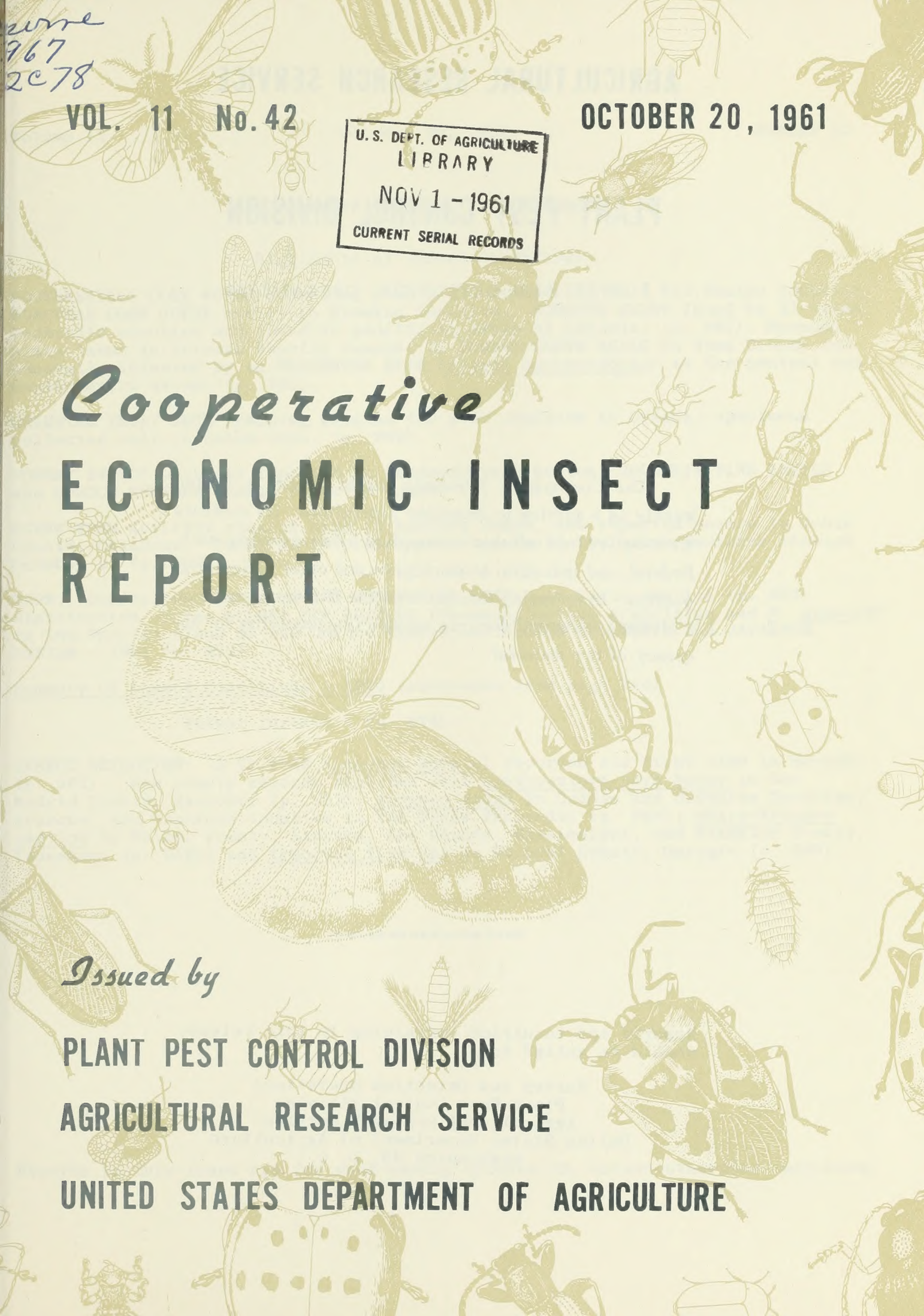

VOL. 11 No. 42

OCTOBER 20, 1961

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Cooperative
ECONOMIC INSECT REPORT

Issued by

PLANT PEST CONTROL DIVISION
AGRICULTURAL RESEARCH SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Survey and Detection Operations
Plant Pest Control Division
Agricultural Research Service
United States Department of Agriculture
Washington 25, D. C.

Volume 11 October 20, 1961 Number 42

COOPERATIVE ECONOMIC INSECT REPORT

Highlights of Insect Conditions

SOUTHWESTERN CORN BORER infesting nearly all cornstalks in 4 New Mexico counties. EUROPEAN CORN BORER survey in Wyoming negative. SORGHUM MIDGE found in 21 Texas Panhandle counties and found in additional areas of Arizona. (p. 961). Bermuda grass lawns in Arizona heavily damaged by RHODES-GRASS SCALE in Yuma County and generally infested by an ERIOPHYID MITE (Aceria neocynodonis) in the central and southwestern areas. (p. 963).

ORIENTAL FRUIT MOTH trapping program for 1961 complete in Oregon; specimens collected only in Salem area. (p. 963).

FOREST INSECT outbreak reported in Intermountain Region; MOUNTAIN PINE BEETLE and SPRUCE BUDWORM damage reported heavy. (p. 965).

SCREW-WORM activity remains high in eastern Texas, and reported severe in Noble County, Oklahoma. Total of 149 cases reported in 15 Louisiana Parishes through October 2. (p. 969).

MAPS: Generalized range of RED TURPENTINE BEETLE in North America (p. 966); distribution of two SILVER FIR BEETLES (Pseudohylesinus granulatus and P. grandis) on the Pacific slope of the United States and Canada (p. 967); and JAPANESE BEETLE - 1961 (p. 972).

Summary of Insect Conditions - 1960 (continued from page 284)

Forest Insects - (p. 974).

INSECT DETECTION: A SKIPPER (Lerodea eufala) recorded for first time in Nevada. (p. 961). New county records reported were southwestern corn borer in New Madrid County, Missouri (p. 961); sorghum midge in Graham and Greenlee Counties, Arizona, and numerous counties in the Texas Panhandle (p. 961); white-fringed beetles in Walker County, Alabama, Lee County, Mississippi, and Franklin County, Tennessee (p. 968); and imported fire ant in Pulaski County, Georgia (p. 969).

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Reports in this issue are for week ending October 13, unless otherwise indicated.

WEATHER BUREAU 30-DAY OUTLOOK

MID-OCTOBER TO MID-NOVEMBER 1961

The Weather Bureau's 30-day outlook for mid-October to mid-November calls for temperatures to average below seasonal normals from the eastern Great Lakes and Ohio Valley eastward to the Atlantic Seaboard and also over southern portions of the Nation from Texas eastward. Above normal temperatures are predicted for the Far West as well as the Northern and Central Plains. In the remaining area, near normal averages are indicated. Precipitation is expected to be subnormal over most of the country except for near normal amounts along the Gulf Coast, and for amounts in excess of normal over the Northeast.

Weather forecast given here is based on the official 30-day "Resume and Outlook", published twice a month by the Weather Bureau. You can subscribe through Superintendent of Documents, Washington 25, D. C. Price $4.80 a year, $2.40 a half year.

WEATHER OF THE WEEK ENDING OCTOBER 16

Dry, sunny weather and unseasonably mild temperatures prevailed in most areas east of Mississippi River until a cold front passage on Friday and Saturday brought moderate to heavy precipitation to the Northeast and light to moderate amounts along the Atlantic coast. Following the passage of the front, abnormally cold, windy weather persisted through the weekend. New England reported its first general snowfall of the season and the earliest in 27 years. Some snow also fell at higher elevations in New York and New Jersey and in the mountains of eastern Tennessee. Amounts in New England, although generally only a trace, ranged up to near 1/2 inch in northwestern Connecticut, up to 2 inches in the mountains of Massachusetts and New Hampshire, and up to 6 inches in northern Maine. Little or no precipitation fell in most southern areas, and soil moisture is short in much of the Southeast. The central and southern portion of the Florida Peninsula was an exception, as a soil moisture shortage there was relieved by showers all week along the southeast coast and after midweek in other central and southern portions of the Peninsula.

The weather was also generally abnormally mild from the Mississippi River to the Rockies until Thursday and Friday when a change to much colder occurred. Moderate to heavy rains fell in a belt extending from south-central Texas to the upper Mississippi Valley. Amounts ranged up to more than 3 inches at many stations in the eastern portions of the Great Plains and 4.20 inches in 24 hours on the 10th and 11th set a new record for Huron, South Dakota. Damaging winds and lightning accompanied the rains in Wisconsin and hail was reported in several counties of Iowa. In the Far West, precipitation fell in the Rocky Mountain area at the beginning of the week and in the Pacific Northwest during the first half. Heavy drifting snow was reported in Wyoming and snow fell in some mountain areas of Colorado. Most of Utah received light to moderate precipitation early in the week, but Nevada received only light amounts in the northeast. Only light amounts fell in eastern Montana, where topsoil moisture is short in north-central and northeastern areas. Temperatures rose to unusually high levels along the southern California coast over the weekend when maxima rose to well over 100°.

Temperatures for the week averaged well above normal in New England for the eighth consecutive week. From the Great Lakes eastward weekly averages ranged up to 6° above normal, and also along the southern California coast. Elsewhere in the Nation, temperatures for the week averaged within 3° of normal. However, this was the sixth consecutive cold week in Wyoming and some other central Rocky Mountain areas. (Summary supplied by U. S. Weather Bureau).

CEREAL AND FORAGE INSECTS

SOUTHWESTERN CORN BORER (Zeadiatraea grandiosella) - MISSOURI - Collected for the first time in New Madrid County on August 21 by A. J. Keaster and D. Allemann. One adult taken at Portageville, 2 larvae at Catron and 2 larvae at Risco; all from corn. Det. by H. W. Capps. (Munson, Thomas, Wood). NEW MEXICO - Larvae infesting almost 100 percent of cornstalks in Quay, De Baca, Curry and Roosevelt Counties; larvae often averaged 2-3 per cornstalk. Only occasional larva found in milo adjacent to corn, but none found in fields not adjacent to corn. (N. M. Coop. Rpt.).

EUROPEAN CORN BORER (Ostrinia nubilalis) - WYOMING - None found during survey in Laramie, Goshen, Platte, Crook, Weston, Park, Washakie and Big Horn Counties. (Spackman, Fullerton). TENNESSEE - Found widespread in Hardeman County during September. (PPC, So. Reg.).

FALL ARMYWORM (Laphygma frugiperda) - TEXAS - Spotted, light infestations appearing on small grains in scattered areas in eastern half of State. (Texas Coop. Rpt.). OKLAHOMA - Light (3 per sweep) in alfalfa in southwest; larvae ranged 1-6 per whorl in volunteer sorghum in Payne County, with approximately 80 percent of terminals damaged; ranged 0-2 per foot of row in wheat in Love County. Also reported on alfalfa in Canadian County. (Okla. Coop. Sur.).

A SKIPPER (Lerodea eufala) - NEVADA - Undetermined species,reported in CEIR 11(36):844, has been determined as this species. Collected on corn, sorghum and Sudan grass for first time in 1960 in Clark and southern Lincoln Counties. (Bechtel). According to ARS records, this is a new State record.

CORN LEAF APHID (Rhopalosiphum maidis) - ALABAMA - Heavy on grain sorghum in Lee County. (Guyton). UTAH - Caused some damage to corn and sorghum in Washington County. (Knowlton).

RICE DELPHACID (Sogata orizicola) - LOUISIANA - One male, tentatively identified as this species, collected from grass in Baton Rouge; small rice plantings nearby not infested. Surveys for S. orizicola in remainder of State negative. (Newsom, Chapin). Surveys conducted on 59 farms in 13 LOUISIANA parishes and in 4 TEXAS counties during September, with negative results. (PPC, So. Reg.).

RICE WEEVIL (Sitophilus oryzae) - ALABAMA - Heavy infestations occurring on grain sorghum in Lee County. (Guyton).

GRASSHOPPERS - NORTH DAKOTA - Egg survey in western part of State substantiated adult survey conducted earlier. Egg development 5 percent segmented, 10 percent eye-spot, 15 percent coagulated and 70 percent in clear stage. (Wilson, Brandvik, PPC). NEW MEXICO - Causing minor damage to wheat in several areas of Curry County. (N. M. Coop. Rpt.).

SORGHUM MIDGE (Contarinia sorghicola) - ARIZONA - Infestations found in late grain sorghum in Graham and Greenlee Counties, October 10 and 11 respectively; both are new county records. Adult emergence obtained from sorghum heads collected along roadside in eastern Pima County; collection quite some distance from any cultivated sorghum, and to date no field collection has been recorded in Pima County. Infestations light in Graham County and very light in Greenlee County, although killing frost occurred in Greenlee County and green sorghum is difficult to locate. Survey failed to disclose pest in lower elevation areas. (Ariz. Coop. Sur.). TEXAS - Survey in panhandle area revealed presence in grain sorghum in Sherman, Wheeler, Randall, Collingsworth, Swisher, Bailey, Hale, Floyd, Cochran, Hockley, Lubbock, Crosby, Yoakum, Terry, Lynn, Garza, Dawson, Scurry, Howard, Nolan and Taylor Counties. Other counties expected to be added as adults emerge from head samples. (Texas Coop. Rpt.). OKLAHOMA - Heavy in immature heads of grain sorghum in experimental plots in Payne County. (Okla. Coop. Sur.).

SPOTTED ALFALFA APHID (*Therioaphis maculata*) - IDAHO - Actively killing alfalfa in 2 fields observed during period ending October 13. Generally, populations greatly reduced due to cooler weather and increased number of predators, especially Coccinellidae. (Waters). KANSAS - Counts about 5 per sweep on alfalfa in Ellis County, September 25. (Harvey). Currently averaged 5 per sweep on same crop in Riley and Pottawatomie Counties. (Peters). OKLAHOMA - Light to medium (12.5-75 per sweep) in alfalfa in southwest, south central and southeast areas. (Okla. Coop. Sur.).

PEA APHID (*Macrosiphum pisi*) - NEW MEXICO - Generally light on alfalfa in Torrance, Santa Fe, Curry and Roosevelt Counties. (N. M. Coop. Rpt.). OKLAHOMA - Light (0.6-20 per sweep) on alfalfa in southwest and southeast areas. (Okla. Coop. Sur.). KANSAS - Counts about 30 per sweep on alfalfa in Ellis County on September 25. (Harvey). Currently averaged 5 per sweep on alfalfa in Riley and Pottawatomie Counties. (Peters). NEBRASKA - Ranged 25-75 per sweep on alfalfa in northeastern area. (Bergman). MARYLAND - Averaged 15 per sweep on alfalfa in Talbot County. (U. Md., Ent. Dept.). DELAWARE - Average counts per sweep in alfalfa 35 in New Castle County, 20 in Kent County and 4 in Sussex County; counts increased in all counties. (Burbutis, Mason).

PLANT BUGS - OKLAHOMA - Light populations of *Lygus lineolaris* observed in alfalfa fields in southeast and southwest. (Okla. Coop. Sur.). DELAWARE - Adults of *L. lineolaris* per 100 sweeps in alfalfa averaged 150 in New Castle and Sussex Counties and 90 in Kent County; counts in soybeans per 100 sweeps averaged 30 in New Castle County, 20 in Kent County and 40 in Sussex County. Adults of *Adelphocoris rapidus* averaged one per sweep in alfalfa in New Castle and Kent Counties and slightly less in Sussex County; nymphs averaged one per sweep in alfalfa in New Castle County and present in Sussex County. (Burbutis, Mason).

THREE-CORNERED ALFALFA HOPPER (*Spissistilus festinus*) - ARKANSAS - Infestations variable on soybeans still green. (Ark. Ins. Sur.). OKLAHOMA - Light (one per sweep) on alfalfa in southwest; heavier (6 per sweep) in south central area. (Okla. Coop. Sur.). ARIZONA - Infestations declining on alfalfa in most areas, but still average 200-400 per 100 sweeps in some Yuma County fields. (Ariz. Coop. Sur.).

LEAFHOPPERS - ARIZONA - *Empoasca mexara* and *E. solana* ranged 300-600 per 100 sweeps in some Yuma County alfalfa fields. (Ariz. Coop. Sur.). OKLAHOMA - Undetermined species averaged 15-16 per sweep on alfalfa in Choctaw County. (Okla. Coop. Sur.). DELAWARE - *Aceratagallia sanguinolenta* adults averaged 100 per 100 sweeps on alfalfa over State. *E. fabae* adults and nymphs averaged 150 per 100 sweeps on alfalfa in New Castle and Kent Counties. (Burbutis, Mason).

CUCUMBER BEETLES (*Diabrotica* spp.) - DELAWARE - Adults of *D. undecimpunctata howardi* per 100 sweeps averaged 20 in Kent County, 50 in Sussex County on soybeans; 25 in New Castle County, 60 in Kent County on alfalfa. (Burbutis, Mason). LOUISIANA - *D. balteata* ranged 35-86 per 100 sweeps on soybeans and cowpeas in the Opelousas and Baton Rouge areas. (Newsom, Chapin). OKLAHOMA - *D. undecimpunctata howardi* light (one per sweep) on alfalfa in southwest area. (Okla. Coop. Sur.). NEBRASKA - *D. virgifera* and *D. longicornis* adults ranged 3-9 per sweep on alfalfa adjacent to corn in northeast area. (Bergman). SOUTH DAKOTA - *D. longicornis* caused moderate damage in form of goose-necked stalks in corn along Big Sioux River, Moody County. Some adults remain on volunteer oats and occasional corn ears. (Hanten).

MEXICAN BEAN BEETLE (*Epilachna varivestis*) - DELAWARE - Adults present in soybeans in New Castle and Sussex Counties and alfalfa in Kent and Sussex Counties. High count, 150 per 100 sweeps, found in field of alfalfa in Sussex County. (Burbutis, Mason).

BEAN LEAF BEETLE (*Cerotoma trifurcata*) - DELAWARE - Adults averaged 40 per 100 sweeps in soybeans in Kent County and 90 per 100 sweeps in same crop in Sussex County. (Burbutis, Mason).

ALFALFA CATERPILLAR (Colias eurytheme) - OKLAHOMA - Light (0.4 per sweep) on alfalfa in southwest area. (Okla. Coop. Sur.). MARYLAND - Adults active and laying eggs on alfalfa in Talbot County. (U. Md., Ent. Dept.). DELAWARE - Larvae remain in alfalfa in New Castle and Sussex Counties; high count, 40 per 100 sweeps, in New Castle County. (Burbutis, Mason).

GREEN CLOVERWORM (Plathypena scabra) - DELAWARE - Adults averaged 100 per 100 sweeps in alfalfa over State. (Burbutis, Mason).

PALE WESTERN CUTWORM (Agrotis orthogonia) - NEW MEXICO - Recent adult flights reported in Curry and Quay Counties; adults numerous in several areas. (N. M. Coop. Rpt.).

VELVETBEAN CATERPILLAR (Anticarsia gemmatalis) - SOUTH CAROLINA - Appeared late on soybeans this season. (Nettles et al., Oct. 4).

YELLOW-STRIPED ARMYWORM (Prodenia ornithogalli) - OKLAHOMA - Light (3-8 per 10 sweeps) on alfalfa in southwest. (Okla. Coop. Sur.).

RHODES-GRASS SCALE (Antonina graminis) - ARIZONA - Heavy and damaging many Bermuda grass lawns in Yuma County. (Ariz. Coop. Sur.).

AN ERIOPHYID MITE (Aceria neocynodonis) - ARIZONA - Infestations continue general on central and southwest area Bermuda grass lawns, but appear less severe than during 1960. (Ariz. Coop. Sur.).

SOD WEBWORMS (Crambus spp.) - OREGON - Abundant in Columbia and Clatsop Counties, with considerable damage to bentgrass seed fields. (Every, Dickason).

FRUIT INSECTS

ORIENTAL FRUIT MOTH (Grapholitha molesta) - OREGON - Trapping program completed; 49 specimens taken in 7 infested orchards in Salem area. Trapping in other areas negative. (Larson).

APHIDS - COLORADO - Fall migrants of Myzus persicae returned to peach trees in Mesa, Delta, Montrose and Garfield Counties. (Bulla). NEW MEXICO - M. persicae migrated to peach trees in Las Cruces area, Dona Ana County. (N. M. Coop. Rpt.). IDAHO - Eriosoma lanigerum fall flights heavy in Moscow area. (Gittins). ALABAMA - Heavy infestations of Aphis pomi on apple foliage in Lee County. (Guyton).

OMNIVOROUS LOOPER (Sabulodes caberata) - CALIFORNIA - Medium infestation on avocado trees in Nipoma, San Luis Obispo County. (Cal. Coop. Rpt.).

SAN JOSE SCALE (Aspidiotus perniciosus) - IDAHO - Infested prune trees in orchard near Parma; ranged very low to quite high, with some limbs apparently killed by scale. (Scott).

WALNUT HUSK FLY (Rhagoletis completa) - CALIFORNIA - Heavy populations trapped in Kenwood and Sonoma, Sonoma County. (Cal. Coop.Rpt.).

CITRUS BLACKFLY (Aleurocanthus woglumi) - MEXICO - Chemical Control Zone: Extensive infestation found in a large grove near Montemorelos, Nuevo Leon, during latter part of September. Infestation believed to be general in the grove. Treatments of infested trees underway. Inspections in Baja California, Sonora and Tamaulipas negative. Total of 241 properties involving 6,075 trees found infested in Nuevo Leon during September. Biological Control Zone: Parasitism by Prospaltella opulenta in State of Campeche continues to increase. Prospects for early commercial control appears very good. (PPC, Mex. Reg., Sept. Rpt.).

A WHITEFLY (Dialeurodes sp.) - LOUISIANA - Eggs totaled 42 per 50 satsuma orange leaves in Baton Rouge. (Newsom, Chapin).

ORIENTAL FRUIT FLY (Dacus dorsalis) - CALIFORNIA - Fruit cutting completed in area of 1960 find in Anaheim, Orange County; 2,000 tropical and subtropical host fruits and fruit held by Agricultural Commissioner's office negative. (Cal. Coop. Rpt.).

CITRUS RED MITE (Panonychus citri) - LOUISIANA - Mites totaled 75 and eggs 51, on 50 satsuma orange leaves in Baton Rouge. (Newsom, Chapin).

TRUCK CROP INSECTS

POTATO TUBERWORM (Gnorimoschema operculella) - UTAH - Harvested potatoes negative for this species in Washington and Iron Counties. (Knowlton).

BEAN LEAF BEETLE (Cerotoma trifurcata) - VIRGINIA - Severe, local infestation on beans in King and Queen County. (Tarpley, Sedivy, Oct. 6).

TARNISHED PLANT BUG (Lygus lineolaris) - DELAWARE - Adults averaged 70 per 100 sweeps and nymphs present on beans in Sussex County. (Burbutis, Mason).

SOUTHERN GREEN STINK BUG (Nezara viridula) - VIRGINIA - Severe, local infestation on beans in King and Queen County. (Amos, Allen, Sept. 30).

IMPORTED CABBAGEWORM (Pieris rapae) - DELAWARE - Eggs common on cabbage in New Castle County and on cabbage and cauliflower in Kent County. (Burbutis, Mason).

CABBAGE LOOPER (Trichoplusia ni) - DELAWARE - Eggs and larvae present to common on cabbage in Kent County. (Burbutis, Mason).

CABBAGE APHID (Brevicoryne brassicae) - DELAWARE - Colonies present in large, commercial cabbagefield in central Kent County. (Burbutis, Mason).

A NITIDULID (Conotelus mexicanus) - NEW MEXICO - Extremely numerous and entered heads of cabbage near Mesquite, Dona Ana County; often averaged over 1,000 adults per head. (N. M. Coop. Rpt.).

MILLIPEDS - ALABAMA - Appeared on turnip and kale seedlings in Lee County. (Barwood).

BANDED CUCUMBER BEETLE (Diabrotica balteata) - LOUISIANA - Ranged 34-98 per 100 sweeps on sweetpotatoes near Arneaudville. (Newsom, Chapin).

SWEETPOTATO WEEVIL (Cylas formicarius elegantulus) - NEW MEXICO - Inspections in Roosevelt County negative. (N. M. Coop. Rpt.).

RASPBERRY CROWN BORER (Bembecia marginata) - COLORADO - Infested raspberries in Fort Collins area. (Hantsbarger).

COTTON INSECTS

PINK BOLLWORM (Pectinophora gossypiella) - FLORIDA - Larva collected from hibiscus at Plantation Key, Monroe County, September 28. This is first specimen collected for nearly one month. (Fla. Coop. Sur., PPC). LOUISIANA - Surveys in State have been negative to date for season. (Newsom, Chapin). ARIZONA - Infestations very heavy in an area near Solomon, Graham County, with 70-80 percent of bolls infested. No further collections have been made in central area of State to date. (Ariz. Coop. Sur.). CALIFORNIA - Gin trash inspection underway in cotton areas from Merced south. Light trap operation continues in all areas and lint cleaner inspection initiated in Riverside County. No evidence of pink bollworm has been found. (Cal. Coop. Rpt.).

BOLLWORMS (*Heliothis* spp., et al.) - ARIZONA - Medium infestations continue in some cotton statewide. (Ariz. Coop. Sur.).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

WESTERN PINE BEETLE (*Dendroctonus brevicomis*) - CALIFORNIA - This species and *Ips* spp. damaging ponderosa pine on 160 acres of forest in Grant Star, Contention Ridge and Johnson Unit timber sales of Stanislaus National Forest. Complete kill in groups up to 15 trees now evident and increasing. (M. K. Borrell).

SOUTHERN PINE BEETLE (*Dendroctonus frontalis*) - ALABAMA - Infestations in Bibb County static to decreasing; no new outbreaks observed. (Buttram).

Forest Insect Situation in the Intermountain Region: Worst insect outbreak in history of this region underway. BARK BEETLES reported destroying 5-10 trees for every one they killed in 1960. Aerial reconnaissance revealed MOUNTAIN PINE BEETLE (*Dendroctonus monticolae*) to be attacking an estimated 600,000 lodgepole pine trees throughout the region, especially along the north slopes of the Uinta Mountains, Wasatch National Forest. SPRUCE BUDWORM (*Choristoneura fumiferana*) endangering some 300,000 acres of fir on Sawtooth, Challis and Salmon National Forests and heavily infesting 100,000 acres on Targhee National Forest in Idaho. In many areas, defoliation is so severe that aerial treatments may be applied to save timber stands. (For. Ser., Sept. 22).

A PHYCITID (*Dioryctria abietella*) - LOUISIANA - Causing damage to loblolly and slash pine throughout State. (Newsom, Chapin).

A PINE TIP MOTH (*Rhyacionia* sp.) - CALIFORNIA - Damaging Jeffrey and sugar pines in breeding orchards at Badger Hill, El Dorado National Forest, to extent control is necessary. (C. W. Fowler).

PANDORA MOTH (*Coloradia pandora*) - CALIFORNIA - Populations extremely low on Jeffrey pine in Idyllwild area, Riverside County. (J. Pierce).

RED-HEADED PINE SAWFLY (*Neodiprion lecontei*) - VIRGINIA - Larvae locally severe near Luray, Page County; 5 acres affected. (Rowell, Saunders, Sept. 22).

FALL WEBWORM (*Hyphantria cunea*) - TEXAS - Heavy, local infestations present on variety of shade trees in eastern areas of State. (Texas Coop. Rpt.).

ORANGE-STRIPED OAKWORM (*Anisota senatoria*) - LOUISIANA - Abundant in northern part of State, causing noticeable defoliation of oaks. (Newsom, Chapin).

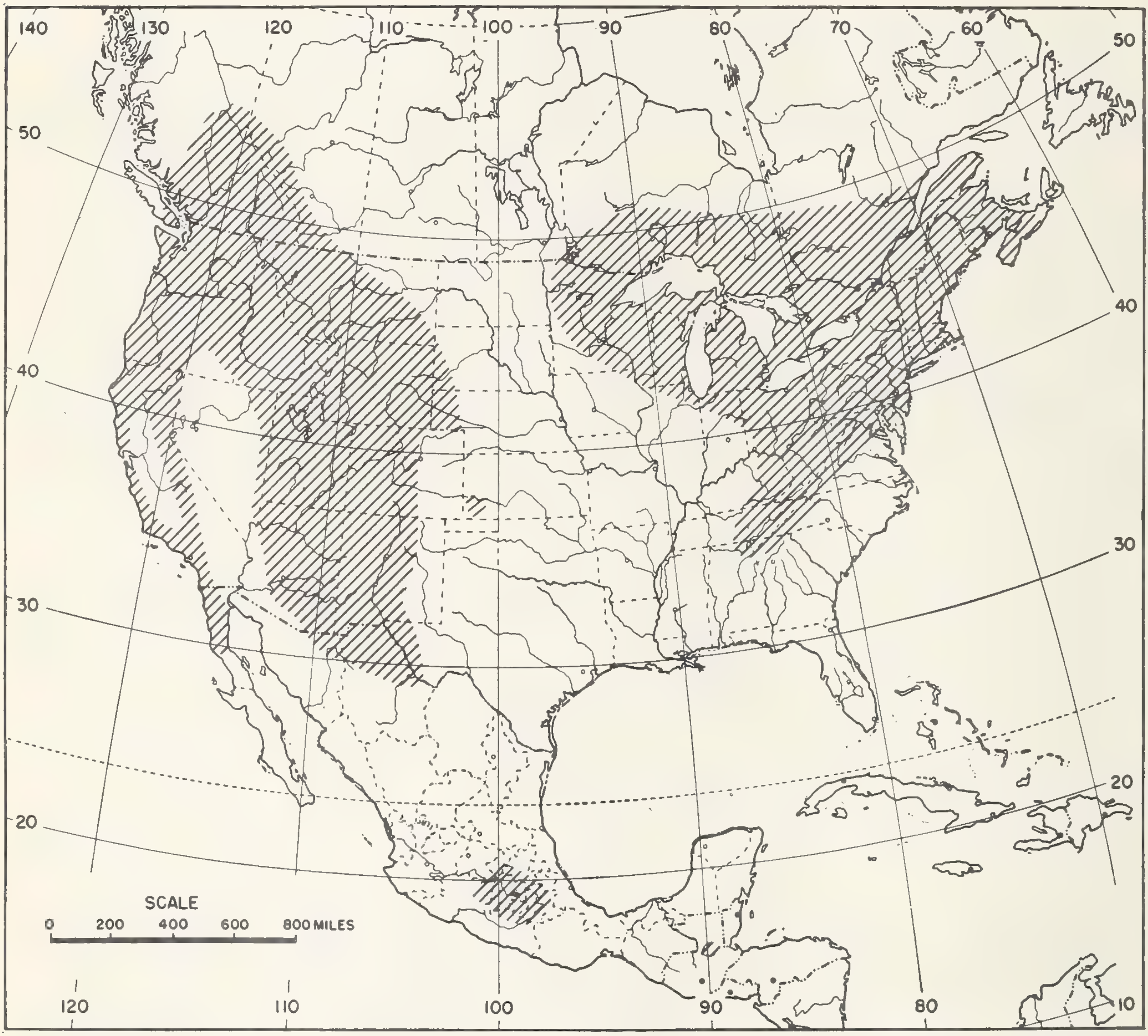
YELLOW-NECKED CATERPILLAR (*Datana ministra*) - LOUISIANA - Infesting oak and other trees in northern portion of State. (Newsom, Chapin).

SADDLEBACK CATERPILLAR (*Sibine stimulea*) - LOUISIANA - Common on shade trees in East Baton Rouge Parish. (Newsom, Chapin).

A SATURNIID (*Hemileuca* sp.) - NEW MEXICO - Adults emerging in area where larvae severely defoliated cottonwood trees on White Sands National Monument. (N. M. Coop. Rpt.).

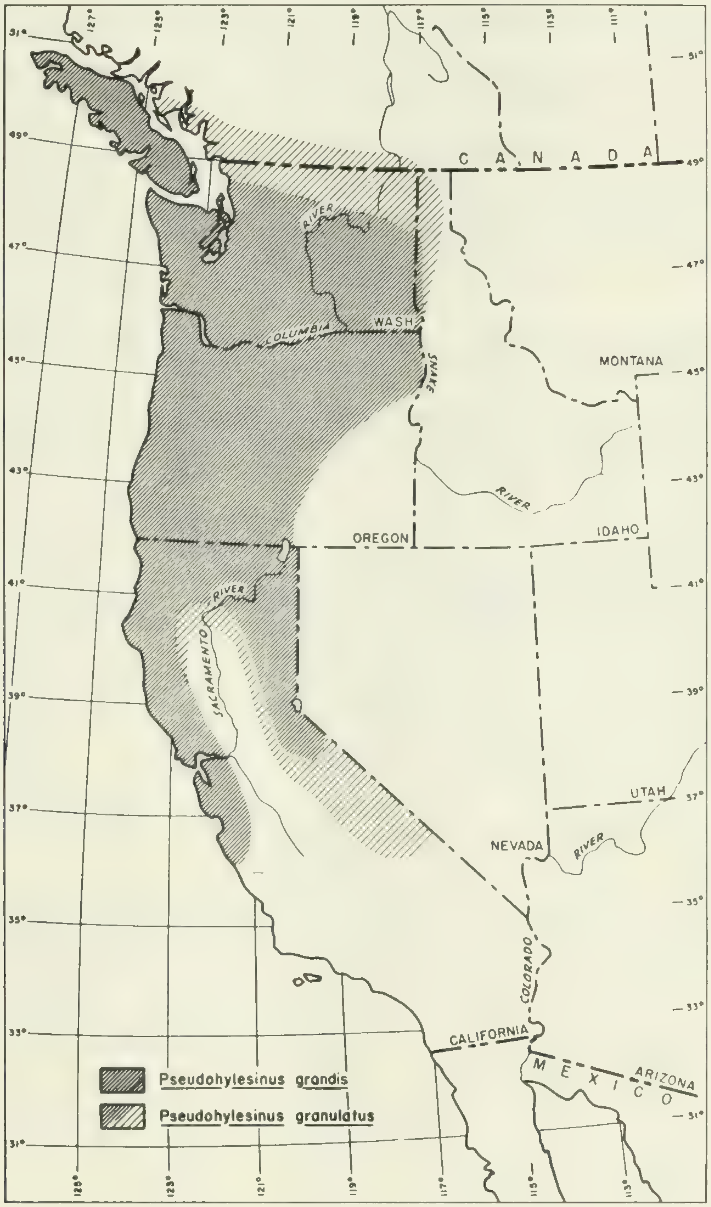
TWIG PRUNER (*Oncideres cingulata*) - OKLAHOMA - Active on pecan and oak trees in Lincoln and Mayes Counties. (Okla. Coop. Sur.). VIRGINIA - Heavy on hickory trees at a location in Culpeper, Culpeper County. (Amos, Heltzel, Oct. 7).

GENERALIZED RANGE OF RED TURPENTINE BEETLE (Dendroctonus valens) IN NORTH AMERICA



From Forest Pest Leaflet 55
Forest Service, USDA
July 1961

DISTRIBUTION OF TWO SILVER FIR BEETLES (*Pseudohylesinus granulatus* and *P. grandis*) ON THE PACIFIC SLOPE OF THE UNITED STATES AND CANADA



From Forest Pest Leaflet 60
Forest Service, USDA
September 1961

APHIDS - UTAH - *Myzocallis ulmifolii* light to moderate at Manti, Sevier County, and in Salt Lake County; and *Pterocomma* spp. extremely numerous on weeping willows at Duchesne, Duchesne County. (Knowlton). MARYLAND - *Lachnus salignus* very abundant on willow locally in Prince Georges County. (U. Md., Ent. Dept.).

AN ASH TINGID (*Leptoypha minor*) - CALIFORNIA - Heavy adult populations occurring on Modesto ash trees in Los Banos, Merced County. (Cal. Coop. Rpt.).

WALKINGSTICK (*Diapheromera femorata*) - OKLAHOMA - Causing extensive defoliation of oak trees in Le Flore County. (Okla. Coop. Sur.).

HORNTAILS (*Sirex* spp.) - CALIFORNIA - Heavy populations, primarily *S. areolatus*, severely damaging fire-injured timber in Tahoe areas of El Dorado and Placer Counties. Several hundred million board feet of timber being logged is causing sawmills to seek treatment of sawed lumber due to number of new dwellings being damaged by emergence of horntails. If satisfactory economic treatment is not developed, several mills will cease cutting salvage logs. (Cal. Coop. Rpt.).

A CYNIPID GALL (*Andricus laniger*) - LOUISIANA - Abundant on live oaks in East Baton Rouge and St. Martin Parishes. (Newsom, Chapin).

RED-HUMPED CATERPILLAR (*Schizura concinna*) - MISSOURI - Defoliated sweetgum trees in a nursery in Phelps County; population extremely high on one tree. (Owens).

TOBACCO BUDWORM (*Heliothis virescens*) - ALABAMA - Destroying potted geraniums in Lee County. (Barwood).

RHODODENDRON BORER (*Ramosia rhododendri*) - MARYLAND - Larvae injurious to rhododendron at Takoma Park, Montgomery County. (U. Md., Ent. Dept.).

A NOCTUID (*Catabena esula*) - CALIFORNIA - Larvae heavy on twigs of lantana in San Jose, Santa Clara County. (Cal. Coop. Rpt.).

BANDED CUCUMBER BEETLE (*Diabrotica balteata*) - LOUISIANA - Damaging chrysanthemums in Baton Rouge. (Newsom, Chapin).

COTTONY-CUSHION SCALE (*Icerya purchasi*) - LOUISIANA - Heavy on pittosporum in a nursery in Tangipahoa Parish. (Newsom, Chapin).

COCCIDS - CALIFORNIA - *Aspidiotus forbesi* medium and *Parlatoria oleae* heavy on Modesto ash in Maxwell, Colusa County. (Cal. Coop. Rpt.). OKLAHOMA - *Unaspis euonymi* medium to heavy on rose and euonymus plants in Lawton, Comanche County. (Okla. Coop.Sur.).

PRIVET MITE (*Brevipalpus obovatus*) - CALIFORNIA - Heavy on *Acanthus* sp. in Fillmore, Ventura County. (Cal. Coop. Rpt.).

INSECTS AFFECTING MAN AND ANIMALS

HORN FLY (*Haematobia irritans*) - TEXAS - Remains a problem, but with slightly decreased activity in most areas. (Texas Coop. Rpt.). OKLAHOMA - Populations ranged 100-200 per cow in northern Noble County; populations decreased in Payne County. (Okla. Coop. Sur.). NEBRASKA - Averaged 700 per cow and 1,500 per bull in Custer County; estimated 400 per animal on 2 dairy herds in northeastern area. (Roselle, Bergman).

HORSE BOT FLIES (*Gasterophilus* spp.) - OKLAHOMA - Ranged 3-5 per animal on 60 Arabian horses at Wagoner. (Okla. Coop. Sur.).

HOUSE FLY (*Musca domestica*) - OKLAHOMA - Populations decreased appreciably in Payne County; cooler weather caused migration into homes. (Okla. Coop. Sur.).

STABLE FLY (*Stomoxys calcitrans*) - CONNECTICUT - Sufficiently numerous about housing project in Hartford to be a nuisance. Possibly the cause of many infected bites among children in the area. (Charpentier, Oct. 5). OKLAHOMA - Ranged 70-80 per head on cattle in Payne County. (Okla. Coop. Sur.).

SCREW-WORM (*Callitroga hominivorax*) - ALABAMA - Several cases reported in northeastern area probably due to imported infested animals. (Buttram). LOUISIANA - Cases through October 2 totaled 149 on 106 premises in 15 parishes. More specimens collected in last 2 weeks of August than any other 2-week period of 1961 outbreak. (Newsom, Chapin). OKLAHOMA - Severe infestations continue in Noble County; 8-10 cases reported in herd of 80 cows and 4 cases reported in herd of 50 Angus cows in Payne County. (Okla. Coop. Sur.). TEXAS - Activity remains extremely heavy in eastern area, but apparently decreasing in western areas. (Texas Coop. Rpt.).

MOSQUITOES - NEVADA - Increased numbers of *Culiseta* sp. adults found in pink bollworm light traps in Pahrump Valley, Nye County. (Nev. Coop. Rpt.). COLORADO - Larvae and pupae of *Culex tarsalis* and *Culiseta inornata* abundant in roadside ditches and marshy pastures southeast of Fort Collins. Light trap collections at Greeley averaged four specimens each of *Aedes vexans*, *C. tarsalis* and *C. inornata* per night; reduction from previous week probably due to cold night temperature week ending October 8. (Harmston). TEXAS - Abundance greater in September than August in Jefferson County; principal species were *Culex* sp., *A. sollicitans*, *A. taeniorhynchus*, *A. vexans*, *Psorophora ciliata*, *P. confinnis*, *Anopheles crucians*, *A. quadrimaculatus* and *Uranotaenia* sp. *P. ferox* collected for first time in 3 or more years. (Texas Coop. Rpt.). LOUISIANA - One case of equine encephalitis reported in Tangipahoa Parish. (Newsom, Chapin). WISCONSIN - Mosquito populations heavier than at any other time this season in southern areas; principal species *A. vexans*. (Wis. Ins. Sur.) MARYLAND - Adults of *A. sollicitans* very annoying in Calvert, Charles and St. Marys Counties; larvae of *A. vexans* abundant in roadside pool near Windyhill, Talbot County. (U. Md., Ent. Dept.).

STRIPED HORSE FLY (*Tabanus lineola*) - LOUISIANA - Activity declined in West Baton Rouge Parish. (Newsom, Chapin).

MIDGES - LOUISIANA - Annoying in Plaquemines Parish. (Newsom, Chapin).

SHEEP KED (*Melophagus ovinus*) - UTAH - Moderately numerous on sheep herds in Tooele County and numerous on small herd near Logan. (Knowlton).

PUSS CATERPILLAR (*Megalopyge opercularis*) - ALABAMA - Young boy received local reaction by this species in Geneva County. (Buttram).

CATTLE LICE - UTAH - Treatment with systemic for lice and grub control of 2,000 cattle in Ephraim-Gunnison area, Sanpete County, underway. Common on cattle in Tooele County; expect 75 percent of range cattle to be treated within 30 days. (Knowlton).

BED BUG (*Cimex lectularius*) - NORTH DAKOTA - Infested apartment house in Fargo. (N. D. Ins. Sur.).

TICKS - LOUISIANA - Abundant in Livingston Parish. (Newsom, Chapin).

EAR TICK (*Otobius megnini*) - UTAH - Troubled cattle in several parts of Garfield County this season. (Knowlton). OKLAHOMA - Infested 6 of 120 head of cattle in Pontotoc County. (Okla. Coop. Sur.).

WINTER TICK (*Dermacentor albipictus*) - OKLAHOMA - Appeared on cattle and horses in Payne County. (Okla. Coop. Sur.).

BROWN DOG TICK (*Rhipicephalus sanguineus*) - NEVADA - Reports increased in Las Vegas, Clark County. (Bunker, Lauderdale). ARIZONA - Heavy populations around homes locally in central area. (Ariz. Coop. Sur.).

CHIGGERS - LOUISIANA - Abundant in Livingston Parish. (Newsom, Chapin).

BLACK WIDOW SPIDER (*Latrodectus mactans*) - UTAH - Additional reports received of persons being hospitalized due to this spider. (Knowlton).

STORED-PRODUCT INSECTS

GRANARY WEEVIL (*Sitophilus granarius*) - COLORADO - Found in screenings from Agricultural Stabilization and Conservation Service binsite near Colorado Springs. (Hantsbarger). OKLAHOMA - Damaged farm storage in Canadian County. (Okla. Coop. Sur.).

RICE WEEVIL (*Sitophilus oryzae*) - OKLAHOMA - Damaged farm storage in Canadian County. (Okla. Coop. Sur.).

RED FLOUR BEETLE (*Tribolium castaneum*) - WYOMING - Local adult infestations in stored grain in 5 granaries in Park, Big Horn, Hot Springs and Fremont Counties. (Fullerton).

SAW-TOOTHED GRAIN BEETLE (*Oryzaephilus surinamensis*) - OREGON - Infested bagged grain popcorn at Harrisburg. (Capizzi). WYOMING - Local adult infestations of stored grain in 8 granaries in Park, Big Horn, Washakie, Hot Springs and Fremont Counties. (Fullerton).

A DERMESTID (*Thylodrias contractus*) - COLORADO - Collected in khapra beetle survey in Montrose County. (Anderson, Gilmore).

INDIAN-MEAL MOTH (*Plodia interpunctella*) - OREGON - Infested bagged grain popcorn at Harrisburg. (Capizzi).

GRAIN MITE (*Acarus siro*) - OREGON - Infested bulk seed in Alsea on October 13. (Krantz).

BENEFICIAL INSECTS

LADY BEETLES - OKLAHOMA - Light to moderate populations of several species on alfalfa; ranged 8-10 per sweep in southern areas. (Okla. Coop. Sur.).

NABIDS (*Nabis* spp.) - OKLAHOMA - Averaged 3 per sweep in southeastern area in alfalfa. (Okla. Coop. Sur.).

A FLOWER BUG (*Orius insidiosus*) - OKLAHOMA - Averaged 10 per sweep in alfalfa in southeastern area. (Okla. Coop. Sur.).

MISCELLANEOUS INSECTS

WHITE-FRINGED BEETLES (*Graphognathus* spp.) - Infestations found for first time during September in Walker County, ALABAMA; Lee County, MISSISSIPPI; and Franklin County, TENNESSEE. (PPC, So. Reg.).

ASIATIC OAK WEEVIL (*Cyrtepistomus castaneus*) - VIRGINIA - Very common around home in Greenville, Augusta County. (Rowell, Oct. 6).

A WEEVIL (Trachyphloeus bifoveolatus) - OREGON - Abundant and migrating into homes. (Every).

VARIED CARPET BEETLE (Anthrenus verbasci) - OREGON - Abundant, with damage in homes in western area. (Every).

EARWIGS - ALABAMA - Undetermined species entered homes and became nuisance in Chambers County. (Barwood). TEXAS - Labidura riparia became numerous in flower beds and homes in Tom Green County. (Texas Coop. Rpt.). LOUISIANA - L. riparia migrated into homes in Baton Rouge earlier than previous years. (Newsom, Chapin).

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - GEORGIA - Found in Pulaski County for first time during September. (PPC, So. Reg.).

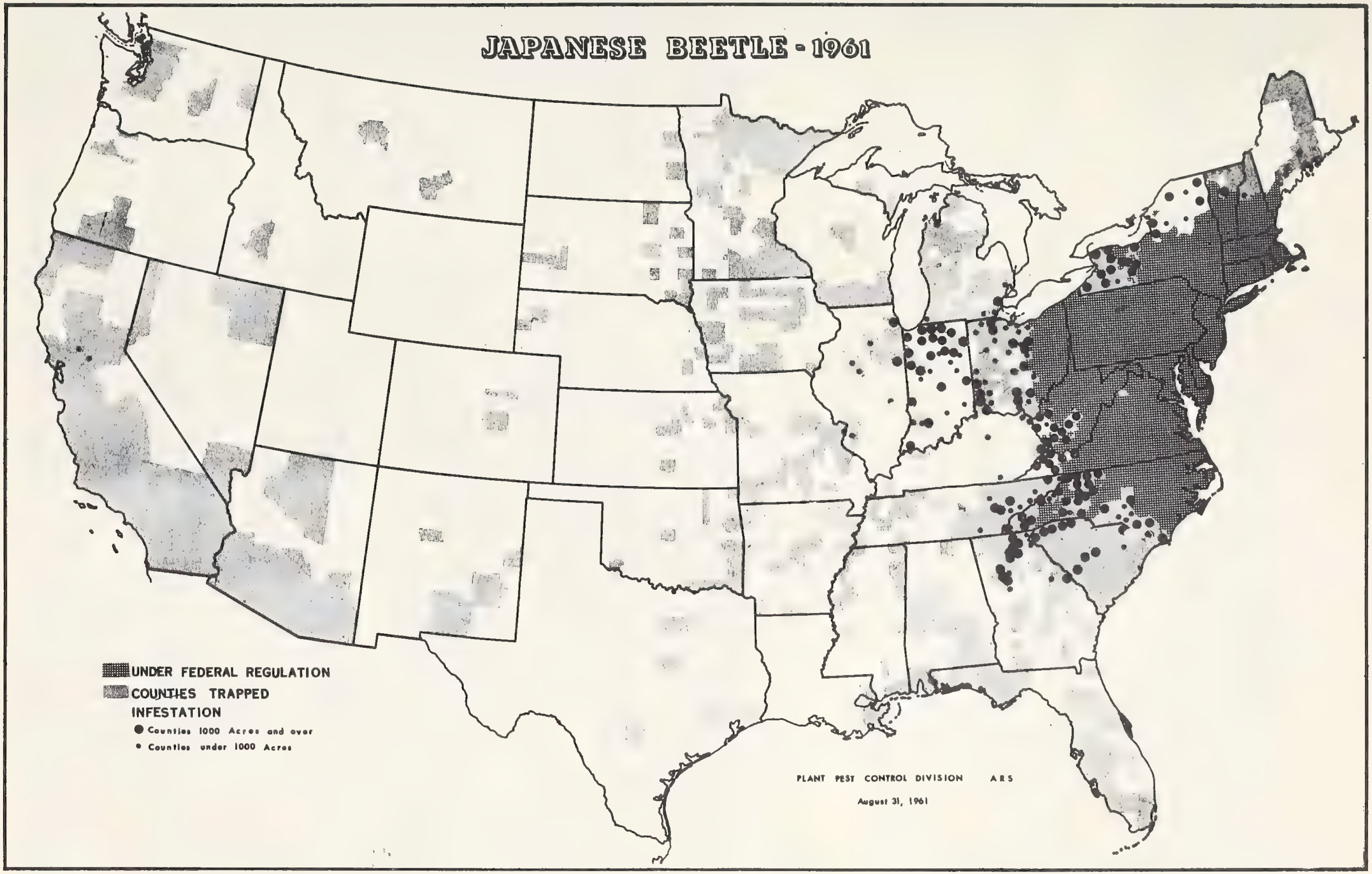
ORIENTAL COCKROACH (Blatta orientalis) - NEVADA - Became severe problem in various buildings in Las Vegas, Clark County. (Lauderdale, White).

BOXELDER BUG (Leptocoris trivittatus) - NORTH DAKOTA - Heavy infestations in and around homes reported from many areas. (N. D. Ins. Sur.). SOUTH DAKOTA - Continues a nuisance in and around homes in eastern area. (Hanten). NEBRASKA - Large numbers in and around homes and farm buildings in northeastern area. (Bergman). UTAH - Extremely numerous about homes in Paradise, Cache County. (Knowlton).

TERMITES - COLORADO - Infestations reported in Pueblo, Jefferson and Larimer Counties. (Hantsbarger, Daniels). WYOMING - Second infestation of Reticulitermes sp. in city block at Riverton, Fremont County. (Fullerton).

A BOOKLOUSE (Liposcelis sp.) - COLORADO - Abundant in screenings from Agricultural Stabilization and Conservation Service binsite near Colorado Springs. (Hantsbarger).

MILLIPEDS - SOUTH DAKOTA - Became problem in homes in Highmore, Hyde County. (Spawn). LOUISIANA - Common in Baton Rouge area. (Newsom, Chapin). KANSAS - Caused concern in late September in Ellis County; entered homes and motels. (Harvey).



JAPANESE BEETLE - 1961

▨ UNDER FEDERAL REGULATION
▨ COUNTIES TRAPPED
INFESTATION
● Counties 1000 Acres and over
• Counties under 1000 Acres

PLANT PEST CONTROL DIVISION ARS

August 31, 1961

LIGHT TRAP COLLECTIONS

	Pseud. unip.	Agrot. ips.	Perid. saucia	Prod. ornith.	Laphyg. frug.	Trich. ni	Heliothis	
							zea	vires.
ARIZONA								
Mesa 10/4-10				69		7	151	
ARKANSAS								
Hope 10/5-11	18	43	3				359*	
Morrilton 10/5-11	42	36					114*	
Fayetteville 10/5-11							18	
FLORIDA								
Gainesville 10/9-10	5	15		4	12		12	
INDIANA (Counties)								
Lawrence 10/2-6	4	2	3		2		13	
Tippecanoe 10/5-11	1	4	5		2		89	
Vanderburgh 10/3		2					1	
KANSAS								
Hays 10/5, 7		3	6					
Manhattan 10/5-12			3	4			55	
LOUISIANA								
Baton Rouge 10/7-13	21	6		46	44	1	19	
MISSISSIPPI								
**Stoneville 10/6-12		95	7	312	92	1,746	985	21
NEBRASKA								
Lincoln 9/28-10/2	1	2	3	1	1		10	1
Scotts Bluff Exp. Sta. 10/1-7	40	94	12					
North Platte 10/5-11	280	1,278	36				73	1
McCook 10/6-8	74	241		1			52	
SOUTH CAROLINA								
Clemson 9/30-10/13	15	19	1	50	55		16	
TENNESSEE (Counties)								
Monroe 9/26-10/2	11	25	19	5	1		36	
Madison 9/26-10/9	33	17	10	4	1		66	
Maury 9/26-10/9	6	13	8	12	33		46	
Robertson 9/26-10/9	38	25	18	21	40		63	
Cumberland 9/26-10/9	31	25	13	18	17		65	
Greene 9/26-10/9	30	18	11	13	6		30	
Johnson 9/26-10/9	7	5	11	6	31		17	
TEXAS								
**Brownsville 9/30-10/6						1	26	
Waco 10/7-13	99	18	176	37		388	481	12
WISCONSIN								
Middleton 10/9-15	4	8	6				11	
Madison 10/9-15	10	12	7				34	
Mazomanie 10/3-9	13	13	6				19	
De Forest 10/3-9	4	4	2				8	

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* These are highest numbers of H. zea taken any week during 1960 at Hope and Morrilton light traps.

** Two traps - Stoneville; 6 traps - Brownsville.

Summary of Insect Conditions - 1960

(continued from page 284)

FOREST INSECTS*

Highlights of Forest Insect Conditions: Several species of insects were especially destructive to forest resource during 1960. Many others caused lesser amounts of damage and loss to forest stands and plantations. As a group, BARK BEETLES were the most important pests and several large-scale outbreaks occurred in the Western and Southern States. DEFOLIATING INSECTS were also important in many sections of the country, particularly in the Central States, the South, Southeast and along the Atlantic coast. SAWFLIES were abundant in many pine plantations in the eastern half of the Nation and several outbreaks occurred in forest stands in the East, South and West. Miscellaneous pests, including WEEVILS, APHIDS, SCALE INSECTS, SHOOT and TIP MOTHS, NEEDLE MINERS, SPITTLEBUGS and many others, were troublesome in local areas countrywide.

Other insect infestations and conditions of regional significance were as follows: EUROPEAN PINE SHOOT MOTH was discovered in several additional communities in WASHINGTON and in Portland, OREGON; the program of importing insect predators to control the BALSAM WOOLLY APHID in the Northeast, the Pacific Northwest and NORTH CAROLINA was continued; the LARCH CASEBEARER continued its spread in northern IDAHO and eastern WASHINGTON; and a RED-PINE SCALE (*Matsucoccus resinosae*) was discovered for the first time in NEW JERSEY.

Forest Insect Conditions in General: MOUNTAIN PINE BEETLE (*Dendroctonus monticolae*) was the most important bark beetle in 1960 and epidemics of varying magnitude occurred in several of the Western States. Stands of lodgepole pine in UTAH and IDAHO were particularly hard hit. Old-growth stands of western white pine in north Idaho were severely attacked and centers of infestation developed or continued in second-growth stands of ponderosa pine in parts of OREGON, CALIFORNIA, NEVADA and Idaho. Suppression of infestations was undertaken in most outbreak areas. The largest project, on the Ashley National Forest, Utah, involved felling and treating of 166,808 infested trees. The Ashley project and others in the Western States resulted in treating 185,567 trees at a cost of $849,876. In addition to the above named states, several damaging infestations were reported in areas of WASHINGTON, WYOMING and MONTANA.

ENGELMANN SPRUCE BEETLE (*D. engelmanni*) also was especially destructive during 1960. Outbreaks of most significance were in the high elevation stands of Engelmann spruce in IDAHO, MONTANA, WYOMING, UTAH, COLORADO and NEW MEXICO. In the latter two states, all the outbreaks were close to cutting areas or in places where green trees had been blown down by strong winds. The most serious of the infestations occurred on the Uinta, Ashley and Wasatch National Forests, Utah. Others of nearly equal importance were on the national forests in southern Colorado and northern New Mexico. Infestations were suppressed in most outbreak areas by treating infested trees, cull logs and stumps. In some areas, green trees were felled to trap attacking beetles. To the extent feasible, trap trees were later logged and, wherever possible, infested trees also were salvaged. Suppression in all outbreak areas involved the treatment of 56,111 infested trees, stumps and windfalls at a total cost of $237,156. The number of centers of Engelmann spruce beetle infestations in OREGON and WASHINGTON increased considerably, but the total infested acreage declined somewhat from prior years. Most of the infestations were in stands scattered along stream bottoms.

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* Information contained in the Forest Insect Summary - 1960, was supplied by entomologists at the Forest and Range Experiment Stations, U. S. Forest Service. Copies of the "Forest Insect Conditions in the United States - 1960", as issued by the Forest Service, may be secured by request from the Division of Forest Insect Research, Forest Service, USDA, Washington 25, D. C.

BLACK TURPENTINE BEETLE (D. terebrans) was the primary insect in the Southern and Southeastern States. There were no major outbreaks, but tree-killing in moderate amounts was widespread and aggregate losses thus were severe. Exceptionally large acreages of pine stands were affected in LOUISIANA and MISSISSIPPI. Smaller acreages were infested in east TEXAS, ALABAMA, ARKANSAS, NORTH CAROLINA and SOUTH CAROLINA. Suppression of infestations was undertaken by treating infested trees or by salvage. In all, 548,810 trees and stumps were treated at a cost of $146,425. No estimate is available of how many thousand trees were salvaged.

SOUTHERN PINE BEETLE (D. frontalis) continued to pose a serious threat to the extensive stands of southern pines in east TEXAS, ALABAMA and other Southern and Southeastern States. Group-killing of trees was widespread in east Texas during the early summer. The threat of heavier loss and spread of infestation was averted, temporarily at least, by prompt suppression in all accessible areas. A total of 134,299 infested trees in outbreak areas were treated at a cost of $119,758. Thousands of additional infested trees were salvaged. Populations were generally low throughout the Southeast, except in the Pickens District of the Sumter National Forest, SOUTH CAROLINA; in coastal pond pine in Dare and Tyrrell Counties, NORTH CAROLINA; and in Accomack and Northampton Counties, VIRGINIA.

WESTERN PINE BEETLE (D. brevicomis) was troublesome within its range in the Western States. In CALIFORNIA, outbreak numbers occurred in a number of ponderosa pine stands adjacent to large burns and in areas of deficient precipitation in the Sierra Nevada Mountains below 5,000 feet elevation. Some local infestations were reported in northern IDAHO and in areas of MONTANA. Epidemic conditions lessened in most areas of WASHINGTON, but the infestation continued upward in most areas of OREGON; the increase being most noticeable on the Fremont, Malheur and Ochoco National Forests.

BLACK HILLS BEETLE (D. ponderosae) was also troublesome within its range in the Western States. Populations in ponderosa pine stands in southern UTAH have shown a definite downward trend for the past several years, but increased in ponderosa pine along the Front Range of the Rocky Mountains. The greatest increase was reported on the Pike and San Isabel National Forests in COLORADO and on the Bighorn National Forest in WYOMING. The number of trees killed increased sevenfold as compared with 1959 in some areas of the latter two States. Infestation decreased in the Black Hills of SOUTH DAKOTA and were locally moderate on parts of the Carson National Forest in northern NEW MEXICO.

The widespread epidemic of DOUGLAS-FIR BEETLE (D. pseudotsugae) that caused heavy losses in stands of Douglas-fir in areas of southern OREGON during the past 3 years subsided,except for a small outbreak center near the Oregon Caves National Monument. In WASHINGTON, infestations on the Colville Indian Reservation and Okanogan National Forest continued upward. No significant outbreaks were reported in CALIFORNIA. The beetle was abundant throughout south IDAHO, western WYOMING and UTAH, with Douglas-fir stands on the Sawtooth National Forest, Idaho, and on the Dixie National Forest, Utah, being particularly hard hit. Infestations increased sharply throughout Douglas-fir stands in ARIZONA and NEW MEXICO, but were less severe than for the past few years in COLORADO and WYOMING.

JEFFREY PINE BEETLE (D. jeffreyi) caused relatively little damage in CALIFORNIA, but ALASKA SPRUCE BEETLE (D. borealis) continued to cause epidemic losses of white spruce and Lutz spruce on the Kenai National Moose Range in southeast ALASKA and on several drainages of the adjacent Chugach National Forest.

PINE ENGRAVERS (Ips spp.) were associated to varying degrees with most of the western pine beetle outbreaks in northern and central CALIFORNIA,and in several areas were aggressive in their own right. They were not a serious problem in the Intermountain and northern Rocky Mountain States, and they did not approach outbreak proportions in LOUISIANA, ARKANSAS and MISSISSIPPI despite late winter ice damage and severe summer drought conditions in parts of these latter States.

Ips spp. were often associated with southern pine beetle activity in east TEXAS and ALABAMA. Hurricanes in 1959 and 1960 were particularly destructive to stands of southern pines in Beaufort and Colleton Counties, SOUTH CAROLINA, and near Ft. Myers, FLORIDA. Ips spp. attacked the uprooted and broken trees, and beetles emerging from these trees attacked and killed many standing trees in South Carolina. This situation did not occur in Florida, however. In OREGON and WASHINGTON, the number of outbreaks of Ips oregoni increased, but the total infested acreage declined substantially from prior years. The Malheur and Wallowa-Whitman National Forests in Oregon suffered the bulk of the loss. I. oregoni was also reported killing tops of some mature ponderosa pines, as well as patches of pine reproduction on the Custer National Forest of MONTANA, scattered ponderosa pine in the northern Black Hills of SOUTH DAKOTA and top sections of pines in NEW MEXICO. Some mature ponderosa pines were killed by I. emarginatus on the Kaniksu National Forest of IDAHO and I. lecontei occurred in outbreak numbers in stands of second-growth ponderosa pine at several locations on the Prescott National Forest of ARIZONA. Also in Arizona, an outbreak of CALIFORNIA FIVE-SPINED IPS (I. confusus) developed in pinyon pine adjacent to Walnut Canyon National Monument. I. avulsus weakened pines in ALABAMA enough to bring on attacks of southern pine beetle and later assumed a secondary role.

A CEDAR BARK BEETLE (Phloeosinus squamosus) was responsible for the death of large numbers of Alaska-cedar and western redcedar on Kuiu and Kupreanof Islands in the central part of the ALASKA Panhandle.

FIR ENGRAVER (Scolytus ventralis) damage in OREGON and WASHINGTON was relatively unimportant during 1960, but the pest was much more abundant than usual and caused increased losses to white and red fir generally in CALIFORNIA. The killing of firs by this engraver was widespread in ARIZONA and NEW MEXICO, with the outbreak covering approximately 25,000 acres on white fir on the Lincoln National Forest and the Mescalero Indian Reservation of New Mexico. Heavy broods of fir engraver were found in pole-sized grand fir near St. Maries, IDAHO. A small outbreak of WESTERN BALSAM BARK BEETLE (Dryocoetes confusus) was reported in subalpine fir trees near Mt. Washburn, Yellowstone National Park, WYOMING, and large numbers of subalpine firs in southern COLORADO and northern NEW MEXICO were attacked and killed by this bark beetle.

CALIFORNIA FLATHEADED BORER (Melanophila californica) continued to be an important factor contributing to the death of pines in various parts of CALIFORNIA. Some of the heaviest damage was in Jeffrey pine stands in the southern part of the State.

WHITE-PINE WEEVIL (Pissodes strobi) damage was recorded throughout pine and spruce stands in the Lake States. From 30 to 50 percent of the trees in many white pine and jack pine stands were infested and damage to red pines was also quite common. Treatments were applied in MICHIGAN and WISCONSIN. The pest was more destructive than usual in MASSACHUSETTS and damage was severe in NEW YORK. Generally, high populations prevailed over the Northeast. In CALIFORNIA, LODGEPOLE TERMINAL WEEVIL (P. terminalis) continued to cause damage to lodgepole pines.

PALES WEEVIL (Hylobius pales) and Pissodes sp., probably approximatus, continued to be a problem in OHIO Christmas tree plantations where pine is cut and replanted within a year. Weevil damage occurred in most plantations in the eastern part of the State. Loss of year-old plantings in some instances reached 100 percent where replanting followed cutting soon after harvesting. An insect-canker complex on white pine was reported from Lake County, Ohio, during the early spring. Heavy feeding by a pine weevil, tentatively identified as P. approximatus, was found consistently near the cankered areas.

PINE CHAFER (Anomala oblivia) caused injury to about 2,500 acres of 2- and 3-year-old loblolly pines near Bolton, NORTH CAROLINA. The damage consisted of defoliation of current season's needles.

WHITE-PINE CONE BEETLE (Conophthorus coniperda) was quite abundant throughout New England where its toll on the seed crop was very high. In CALIFORNIA, the ponderosa pine seed crop was heavy and insect damage, mostly from PONDEROSA-PINE CONE BEETLE (C. ponderosae), was light. Damage to sugar pine cones was variable and the cone crop spotty, but in some localities SUGAR-PINE CONE BEETLE (C. lambertianae) killed practically all the cones.

The SPRUCE BUDWORM (Choristoneura fumiferana) epidemics, a plague in the mixed conifer forests across the Nation, continued unabated in most areas. Infestations in MINNESOTA increased in intensity and spread southward. Those in MONTANA, on a gross acreage of some 3,500,000 acres, were little changed from prior years even though a reduction in severity of defoliation and in moth populations occurred in some places. In COLORADO and NEW MEXICO, outbreaks were the most extensive on record. Infestations in OREGON declined. The only known spruce budworm infestation in CALIFORNIA, which has been active but relatively innocuous for many years in white fir stands of the Warner Mountains, increased both in area and intensity in 1960. Populations were generally lower in southern IDAHO, except on the Challis and Targhee National Forests. Medium to heavy spruce budworm populations existed on balsam fir in the Ashland area of MAINE. Locations and acreages treated during 1960 in the various states were as follows: Maine, 217,000; Minnesota, 24,332; Montana, 117,845; Colorado, 500. Costs of aerial treatments on the 359,677 acres averaged 1.08 dollars per acre.

Of the several new or rarely collected forest insects in CALIFORNIA, one of the more important ones found in 1960 was LARGE ASPEN TORTRIX (C. conflictana). The first recorded outbreak of this pest in California was discovered in aspen stands in Modoc County. The species had been found only twice before in the State. JACK-PINE BUDWORM (C. pinus) populations increased greatly in jack pine stands in several areas of MINNESOTA and MICHIGAN and heavy defoliation was noted on extensive acreages in WISCONSIN. Defoliation was severe on 15,000 acres in Minnesota and 7,400 acres in Michigan.

BLACK-HEADED BUDWORM (Acleris variana) populations declined sharply in the hemlock-spruce stands of southeast ALASKA late in the larval feeding period of 1960, and the light infestation that was present on the Yakima Indian Reservation of WASHINGTON subsided. A small outbreak of light intensity developed in the fir-hemlock stands on the Mt. Hood National Forest, OREGON, but caused little or no damage.

EUROPEAN PINE SHOOT MOTH (Rhyacionia buoliana), which was first discovered in western WASHINGTON in 1959, was found during 1960 at 2 localities in Spokane and many in Seattle and vicinity. One infestation was also found at Portland, OREGON, which was the first record in that State. Mugho and Scotch pines were most prevalently attacked of the 15 species and varieties found to be infested in the 2 States. European pine shoot moth populations remained essentially unchanged from prior years in pine plantations in MICHIGAN and WISCONSIN. The southern half of Lower Michigan contained moderate to heavy populations and the northern half was lightly infested. Populations were higher than in 1959 in Manitowoc County, Wisconsin. In the Northeast, the pest was again a serious depredator of red and Scotch pines. It was especially severe in parts of PENNSYLVANIA and the northern panhandle of WEST VIRGINIA. The shoot moth is becoming a more serious pest in coastal MAINE from Freeport to Newcastle and on Bailey Island.

NANTUCKET PINE TIP MOTH (R. frustrana) killed tips and retarted growth in young loblolly and short leaf pine plantations throughout the South. In some Southern States, it attracted more attention and comment than any other forest insect. The pest was also common throughout the growing season in the Southeast. Damage to Scotch pine was heavy in New Castle County, DELAWARE, and seedlings in a soil-bank planting in MARYLAND were 90 percent infested. Damage to new shoots of young red and jack pines by R. adana was found recently in MICHIGAN. This insect could become a serious nursery pest. Similar damage to that reported in Michigan was found in WISCONSIN, but the insect causing the damage was not positively identified. A PINE TIP MOTH (Rhyacionia sp.) caused heavy damage to understory pine stands on Custer National Forest, MONTANA and SOUTH DAKOTA.

Two small centers remained of an extensive outbreak of a LARCH BUD MOTH (Zeiraphera griseana) which occurred in stands of western larch in the Cascade Mountains of WASHINGTON in 1958. The outbreak caused no material damage to host trees. LARCH CASEBEARER (Coleophora laricella) spread over an area of more than 8,000 square miles, including practically all of northern IDAHO and parts of eastern WASHINGTON since its discovery at St. Maries, Idaho, in 1957. In 1960, defoliation was severe enough to be visible over an area of 532 square miles in the vicinity of St. Maries and on the adjacent St. Joe National Forest. Approximately 2,500 adults of the BRACONID PARASITE (Agathis pumila) were released near St. Maries in an effort to promote biological control of the casebearer.

DOUGLAS-FIR TUSSOCK MOTH (Hemerocampa pseudotsugata) infestations remained endemic on white fir in CALIFORNIA and a new 3,000-acre infestation was discovered in stands of white fir in the San Mateo Mountains of NEW MEXICO.

ZIMMERMAN PINE MOTH (Dioryctria zimmermani) and D. cambiicola caused extensive damage to red pines of all ages on parts of the Cutfoot Sioux Experimental Forest near Cass Lake, MINNESOTA; and D. abietella and, to a lesser extent, Barbara colfaxiana caused major damage to the light to moderate crop of Douglas-fir cones in CALIFORNIA. PANDORA MOTH (Coloradia pandora) was reported heavy on about 15,000 acres of lodgepole pine in northwestern UTAH, but the infestation of this species along the COLORADO-WYOMING border decreased in intensity. Damage by larvae of an OLETHREUTID (Laspeyresia fletcherana) increased in Douglas-fir Christmas tree stock growing on the Kootenai National Forest in MONTANA and another olethreutid, Eucosma gloriola, commonly caused damage to Scotch and white pines in eastern OHIO.

SAWFLIES of conifers were of considerable importance during 1960, but suppression of infestations was quite limited. A VIRGINIA PINE SAWFLY (Neodiprion pratti pratti) caused extensive defoliation during the year. In VIRGINIA and NORTH CAROLINA, noticeable defoliation occurred on 2,000,000 gross acres. This was the fifth year defoliation has occurred in Virginia and the third in North Carolina. Two small infestations of this sawfly were reported on shortleaf pine near Athens, OHIO. N. pratti paradoxicus defoliated pitch pine extensively in Plymouth County, MASSACHUSETTS, and in NEW JERSEY, south of Trenton.

RED-HEADED PINE SAWFLY (N. lecontei) was the most serious sawfly in MICHIGAN, WISCONSIN and MINNESOTA. Outbreaks occurred on 3,500 acres of red and jack pine in the northwestern part of Michigan's Lower Peninsula; in the New Philadelphia area of OHIO; near De Ridder, LOUISIANA; and in certain localities of NEW YORK. Infestations of N. excitans were widespread, but spotty, on industrial lands in southern Polk County and western Hardin County, TEXAS; and the sawfly defoliated shortleaf pines locally in Paulding County, GEORGIA. WHITE-PINE SAWFLY (N. pinetum) was found in small numbers in most white pine plantations in eastern OHIO and EUROPEAN PINE SAWFLY (N. sertifer) was light to moderate on red and Scotch pine throughout most of Ohio, with the heavier concentrations occurring in the central and eastern parts of the State. Infestations were also reported on Austrian pine in the following counties of IOWA: Lucas, Monroe, Jefferson and Van Buren. European pine sawfly also attacked hard pines, notably red pine, in NEW YORK and southern CONNECTICUT, and RED-PINE SAWFLY (N. nanulus nanulus) defoliated pitch pine in Plymouth, MASSACHUSETTS. In the Intermountain and northern Rocky Mountain States, two species, determined as N. fulviceps complex and N. nanulus contortae, defoliated overstory lodgepole pine in the Little Rocky Mountains, near Zortman, MONTANA, since 1958. The severity of the outbreak declined in 1960. An outbreak of N. edulicolus, which has been underway in stands of pinyon pine near Pioche, NEVADA, during the past few years, decreased in 1960.

Infestations of N. taedae linearis were light and scattered on shortleaf pine throughout southeastern MISSOURI and scarce in LOUISIANA and ARKANSAS. HEMLOCK SAWFLY (N. tsugae) populations declined sharply in the hemlock-spruce stands in southeast ALASKA late in the larval feeding period of 1960.

INTRODUCED PINE SAWFLY (Diprion similis) caused heavy defoliation of white and jack pines in several areas of MINNESOTA and MICHIGAN, and heavy defoliation was noted on extensive acreages in WISCONSIN. The sawfly was observed lightly feeding on white pine during the late summer and early fall in Lake County, OHIO, and it defoliated white and red pines in central CONNECTICUT and eastern MASSACHUSETTS. EUROPEAN SPRUCE SAWFLY (D. hercyniae) and YELLOW-HEADED SPRUCE SAWFLY (Pikonema alaskensis) were both common in MAINE.

LARCH SAWFLY (Pristiphora erichsonii) continued active in stands of western larch in the Blackfoot River drainage, northeast of Missoula, MONTANA, and defoliation by this species was moderate to severe throughout most of the tamarack stands in the Lake States. In northern MINNESOTA, complete stripping was more spotty than previously noted. Farther south, noticeable defoliation was reported as far as central Pine County. In west central WISCONSIN, top-killing was evident in many of the defoliated stands. SEED CHALCIDS (Megastigmus spp.) caused moderate to heavy losses in white fir in CALIFORNIA.

LODGEPOLE NEEDLE MINER (Evagora milleri) continued in outbreak proportions in lodgepole pine forests of the southern Sierra of CALIFORNIA. The most serious infestation was one that has been in progress for more than a decade in the Tuolumne River drainage, Yosemite National Park. Upwards of 60,000 trees remained infested in the park, and tree killing due to the needle miner alone, and to it in combination with mountain pine beetle, has been severe. A needle miner, closely related to this species, continued to defoliate lodgepole pines locally in Mono County, California. Populations were very heavy, but tree mortality was negligible. Infestations of lodgepole needle miner increased in severity in the lodgepole pine forests of the Intermountain States since 1957. Epidemic centers exist on the Targhee, Sawtooth and Caribou National Forests, IDAHO, and on the Bridger National Forest, WYOMING. Infestations in 1960 in the Intermountain States were epidemic on over 200,000 acres. An infestation was also reported near Zortman, MONTANA.

The outbreak of an unidentified NEEDLE MINER (Argyresthia sp.) which developed on ponderosa pine on the Warner District of the Fremont National Forest, OREGON, during 1958, increased markedly in extent and severity in 1960. However, no controls were needed.

WHITE-FIR NEEDLE MINER (Epinotia meritana) was serious in stands of white fir in southern UTAH where an increase in population was observed. Aerial treatments and heavy parasitism reduced the outbreak.

An OLETHREUTID (Petrova albicapitana), which is not normally considered an important forest pest, reached outbreak proportions and reduced over 3,000 acres of jack pine on the Upper Peninsula of MICHIGAN to a noncommercial stand. The infested area appeared to be increasing.

Damage by the BALSAM WOOLLY APHID (Chermes piceae) in Pacific silver fir stands continued to decline in WASHINGTON and OREGON. Tree killing, especially in Washington, reached the lowest level recorded since the infestation flared up in 1954. Discovery of an aggressive population on this host on the Little River Ranger District of the Umpqua National Forest, Oregon, extended the southern boundary of known infestation in the region. Four species of introduced foreign insect predators now appear to be established in the area. An infestation of balsam woolly aphid, which was discovered only a few years ago, killed approximately 6 percent of the Fraser fir trees as of 1960 in a 22,000-acre area of Mt. Mitchell, NORTH CAROLINA; and the aphid was a serious pest of balsam fir in the coastal area of MAINE as well as inland at the

Penobscot Experimental Forest. In MONTANA, a heavy population of COOLEY SPRUCE GALL APHID (C. cooleyi) was reported on needles of Douglas-fir east of Seeley Lake, and the aphid was abundant on ornamental spruce trees near Missoula.

A light to moderate outbreak of SPRUCE APHID (Aphis abietina) on Sitka spruce on the OREGON coast in 1959 subsided to normalcy in 1960. PINE LEAF APHID (Pineus pinifoliae) severely damaged white pine in MAINE, with the seriously infested area being between Lincoln and Topsfield and extending southward to the sea. Less extensive, but locally severe infestations, occurred in the upper Connecticut River Valley in VERMONT and NEW HAMPSHIRE. Effects of this infestation, which dated from 1957, appeared to be more apparent than in prior years.

PINE NEEDLE SCALE (Phenacaspis pinifoliae) has weakened and killed ponderosa pine in a number of places in OREGON and WASHINGTON during the past several years. The principal infestations in 1960 were near Hood River and The Dalles, Oregon, and in the lower Wenatchee Valley and lower Klickitat River drainage in Washington. BLACK PINE LEAF SCALE (Aspidiotus californicus) continued to cause damage to ponderosa and sugar pines in CALIFORNIA, and approximately 2,000 acres of jack pine in Polk County, WISCONSIN, were heavily infested. The scale insect also caused yellowing of shortleaf pine foliage at Jamestown, TENNESSEE.

A RED-PINE SCALE (Matsucoccus resinosae) was discovered in NEW JERSEY for the first time -- in 160 acres of watershed planting around the Wanague Reservoir in the north central part of the State. Eradicative steps were undertaken.

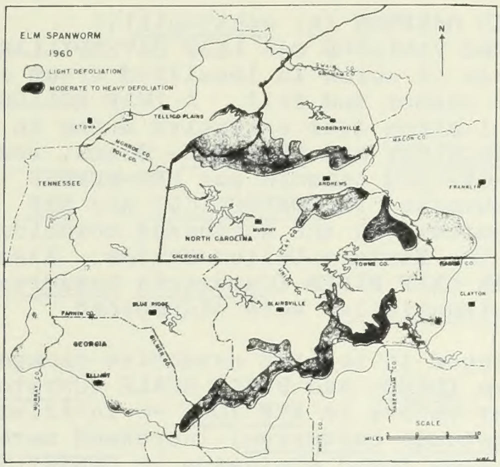
The SARATOGA SPITTLEBUG (Aphrophora saratogensis) potential for damage to red pine plantations at severl locations in WISCONSIN and Upper MICHIGAN was high in 1960, and damage was averted by treating some 2,600 acres on national forests in Wisconsin and Michigan. Approximately 1,600 acres of State and private lands in Wisconsin were also treated. Populations of a MEALYBUG (Puto sp.) continued at epidemic levels within Engelmann spruce stands in UTAH. The infestations occurred in three separate areas, totaling approximately 60,000 acres. Mortality of Engelmann spruce reproduction was noticeable within the older infestations.

A MIDGE (Contarinia sp.) caused damage to the light to moderate crop of Douglas-fir cones and red fir suffered heavily from SEED MAGGOTS (Earomyia spp.) in CALIFORNIA. An outbreak of an unidentified NEEDLE MIDGE was found on Douglas-fir between Newport, WASHINGTON, and Rexford, MONTANA, where a similar infestation was found in 1950. Christmas trees ready for harvest were badly damaged on the Lolo and Kootenai National Forests and the Flathead Indian Reservation. An epidemic of a PINE RESIN MIDGE (Retinodiplosis sp.),that caused severe damage to lateral branch tips in numerous ponderosa pine plantations over the Northern Rocky Mountain States in 1959, subsided in 1960.

A SPIDER MITE (Oligonychus milleri) occurred in outbreak numbers in pine stands over the vast coastal area from NORTH CAROLINA into FLORIDA. Adults were numerous in June. Extensive outbreaks of this mite on pine have been reported in previous years in the Southern States. TEXAS LEAF-CUTTING ANT (Atta texana) destroyed many new pine seedlings throughout its range in east TEXAS and west central LOUISIANA.

Of the various defoliators of hardwoods reported during 1960, ELM SPANWORM (Ennomos subsignarius) was one of the most important. Defoliation by elm spanworm was severe over large acreages in GEORGIA, TENNESSEE and NORTH CAROLINA. The infestation, encompassing a gross area of 1,670,000 acres, was the first reported outbreak of these dimensions in the Southeast since 1878. Oaks and hickories growing on ridgetops have been most severely affected. Nearly 200,000 acres of such stands were moderately to severely defoliated. Areas of heavy defoliation spread in 1960 to the north and east into previously uninfested forests. At the same time, defoliation decreased in severity in other areas.

Extensive defoliation of oaks and other hardwood species was observed in south central KENTUCKY in June. Damage to red oak was particularly heavy in Wayne County, with several stands of 1,000 acres or more being completely stripped. The total area of defoliation throughout Wayne and adjacent counties exceeded 100,000 acres. Damage in Kentucky was believed to be caused primarily by LEAF ROLLERS and two or more species of LOOPERS. The identified species of insects collected from the Kentucky defoliated area were BUCK MOTH (Hemileuca maia), a NOCTUID (Morrisonia confusa), a SPHINGID (Deidamia inscriptum) and elm spanworm.



Extent of elm spanworm defoliation in Georgia, North Carolina, and Tennessee depicted by shaded areas on map.

WESTERN OAK LOOPER (Lambdina fiscellaria somniaria) almost completely defoliated Oregon white oak on approximately 2,080 acres west of Monmouth, OREGON, during the early summer. The trees refoliated later.

GREAT BASIN TENT CATERPILLAR (Malacosoma fragile) has occurred in outbreak numbers in aspen over large areas in northern NEW MEXICO and southern COLORADO for the past decade. Beginning in 1958 and continuing in 1959, larval populations were reduced by natural factors. New infestations were reported on about 100,000 acres in northern New Mexico in 1960 and natural control was negligible. In southern Colorado, infestations continued on a downward trend. FOREST TENT CATERPILLAR (M. disstria) populations were the lowest on record in the Lake States in several years, but the pest severely defoliated water tupelo, blackgum, sweetgum and other bottomland hardwoods in extensive areas of LOUISIANA and ALABAMA during April and May. In Louisiana, areas immediately west of New Orleans and along the Atchafalaya Basin, about 500,000 acres were completely defoliated. An additional 1,000,000 acres in localized areas had some defoliation In the Alabama River Valley, where an outbreak had been underway since 1953, the total area of infestations was estimated at more than 1,000,000 acres, of which 56,000 were heavily defoliated. The forest tent caterpillar was also in outbreak status in hardwood forests in MARYLAND, PENNSYLVANIA and NEW YORK. Heavy feeding occurred in Carroll, Washington and Frederick Counties, Maryland; but the extent of feeding was reduced there as well as in WEST VIRGINIA. Heavy feeding occurred in Cumberland County, Pennsylvania, and light feeding in Dutchess and Columbia Counties, New York. Over 5,000 acres of oak and other hardwoods were 90 to 100 percent defoliated in one New York locality. The parasite, Sarcophaga aldrichi, and virus and bacterial diseases helped reduce populations in the Northeast. EASTERN TENT CATERPILLAR (M. americanum) was abundant in NEW YORK, PENNSYLVANIA and WEST VIRGINIA.

GYPSY MOTH (Porthetria dispar) control was continued in 1960 in the Northeastern States. The various State and Federal programs covered 19,000 acres in NEW YORK, 1,800 acres in MASSACHUSETTS, 20,000 acres in CONNECTICUT, and 2,400 acres in NEW JERSEY. Some 50,000 acres of defoliation were mapped by aerial surveys in the Northeast during 1960; this represents an increase over 1959. Acres defoliated, as reported by the various states, were 6,000 in Maine, 4,500 in New Hampshire, 6,000 in Vermont, 15,000 in Connecticut, 150 in Massachusetts, and 16,500 in New York. About 4,500 acres in New York were 75 to 100 percent defoliated. No moths were trapped in MICHIGAN in 1960.

Hardwood forests on approximately 25,000 acres of the Jefferson National Forest, VIRGINIA, were severely defoliated by FALL CANKERWORM (Alsophila pometaria). In addition, heavy defoliation was reported on the George Washington National Forest, Giles County, Virginia, and on two small tracts of timber near Hot Springs, NORTH CAROLINA. Fall cankerworm and SPRING CANKERWORM (Paleacrita vernata) defoliated large areas in CONNECTICUT and PENNSYLVANIA.

SPINY OAKWORM (Anisota stigma), ORANGE-STRIPED OAKWORM (A. senatoria), YELLOW-NECKED CATERPILLAR (Datana ministra) and VARIABLE OAK LEAF CATERPILLAR (Heterocampa manteo) stripped oaks on thousands of acres in localized areas of ARKANSAS, TEXAS and LOUISIANA during the late summer and fall. A LEAF ROLLER (Argyrotoxa semipurpurana) caused severe defoliation over extensive areas in southwestern MASSACHUSETTS, northwestern CONNECTICUT and NEW YORK. Black, red, scarlet and pin oaks were attacked. Orange-striped oakworm and RED-HUMPED OAKWORM (Symmerista albifrons) were locally abundant in CONNECTICUT and NEW YORK. FALL WEBWORM (Hyphantria cunea) was prominent in the Northeast coincident with its general abnormal abundance all over the Eastern United States. Also in the Northeast, infestations of SOLITARY OAK LEAF MINER (Cameraria hamadryadella) and GREGARIOUS OAK LEAF MINER (C. cincinnatiella) were widespread.

A LEAF MINER (Phyllocnistis populiella) continued to inflict extensive damage to aspen stands in western WYOMING and eastern IDAHO, and BEECH SCALE (Cryptococcus fagi) was found farther north than ever before in NEW YORK -- in Arietta, Hamilton County. ASIATIC OAK WEEVIL (Cyrtepistomus castaneus) increased markedly in numbers in southern WEST VIRGINIA. It was also found statewide in PENNSYLVANIA and in Allegany and Washington Counties, MARYLAND.

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